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HEALTH PROFILE OF INFERTILE WOMEN IN EGYPT

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ABSTRACT

Background: Infertility is a widespread problem that has an emotional, social and economic impact on couples and society. **Aim**: aim of the current study was to assess the profile of the infertile women in Egypt. **Subject & Methods. Design:** A descriptive exploratory research design was utilized for the study as it suits its nature. **Sample:** A total of 300 married women diagnosed as primary or secondary infertility. **Setting**: Outpatient Infertility Clinic at El Manial University Hospital, Cairo University, Egypt; and a private clinic were recruited for the study. **Tools:** Data were collected through an interviewing questionnaire schedule and anthropometric assessment tool. **Results**: The study results indicated that the mean age of the sample was 28.62 ± 6.32 years, and the mean of duration of infertility was 4.324 ± 3.550 years. Fifty-seven percent of the sample had primary infertility, while 43% had secondary infertility. Sixty-one percent of the sample had irregular menstruation, and 40.7% of them had menstrual abnormalities. Seventy-nine point seven percent of the sample had history of gynecological disease, 36.3% of them had polycystic ovary, while 32.2% of them had cervicitis. Forty two point six percent of the sample used different types of contraceptives and more than half of them used intrauterine device (IUD). Fifty-seven percent of the sample had snacks between meals, 42.3% of the sample were depending on fatty saturated diet.. The mean of body mass index was 29.3±6.306. **Conclusion:** the profile of infertile women in Egypt was: older age at marriage, overweight and obese (BMI$\geq$ 30Kg/m^2), depending on fatty saturated diet, eating snacks, having history of polycystic ovarian syndromes, having cervicitis, long use of contraceptive methods, having frequent sexual intercourse**. Recommendation:** teaching women during childbearing period about predisposing factors of infertility and importance of regular screening in early detection of these factors; raising women's awareness regarding to adopting a healthy life style through following dietary program and practicing exercise.

KEYWORDS: Infertility, Health Profile

INTRODUCTION

Infertility is considered a bio psychosocial crisis that, affects every part of an individual's or couple's life. (Broeck, Emery, Wischmann &Thorn, 2010), it is defined as the inability to achieve pregnancy after one year of frequent, unprotected intercourse. Primary infertility applies to a man or woman who has never been able to conceive. Secondary infertility indicates difficulty conceiving after already having conceived (the woman carried the pregnancy to term or had miscarriage) (Jacob 2015).

One in six couple of reproductive age cannot have a baby when they desire, and the number is increasing with the intentional delay in childbearing (Marry and McKinney, 2014). The National Survey of Family Growth (2012) reported

that about 36% of married women were involuntarily childless. While in Egypt, a study was done in rural area of Kafr EL-SHeikh of 1125 married women between 15-49 years to measure the prevalence of primary and secondary infertility among these women, the results of the study showed that, 7.9% had secondary infertility while 2.5% had primary infertility. So it means that the overall prevalence of infertility is 10.4% (Mohsen, EL-Awady and Abd Elazeem, 2001).

Etiology and risk factors for infertility include: biologic factors as: advancing age, sexually transmitted infections; genetic conditions; environmental factors as environmental toxins; lifestyle factors as: obesity, cigarette smoking, and alcohol; and physical factors (40%-55% female factors, 30%-40% male factors, & 10-15% combined factor. In about 10% of the couple the cause is unexplained (Jacob, 2015 & CDC, 2011).

Regarding to management of couples complaining of infertility, it depends on the couple's initial and ongoing evaluation and their personal choices. Some therapies are simple, such as timing intercourse to better coincide with ovulation; other therapies to facilitate pregnancy are include ovulation induction by using a drug as (clomiphene citrate), surgical procedures, therapeutic insemination, egg donation, surrogate parenting, and assisted reproductive technology (ART) these techniques include: In Vetro Fertilization (IVF), Gamete Intra -Fallopian Transfer (GIFT), Zygote Intra-Fallopian Transfer (ZIFT) and Intra Cytoplasmic Sperm Injection (ICSI) (lobo, 2012).

The nurse has a crucial role in the prevention and management of infertility, the nurse should perform careful assessment for the presence of risk factors as age, chronic disease, stress, poor diet, also, education is another important role, that the nurse should teach the couples the signs and timing of ovulation, the most effective times for intercourse, other fertility awareness behaviors that the nurse may inform the women about avoiding douches and avoiding artificial lubricant. Also, the nurse may teach the women about home assessment of cervical mucus and basal body temperature (BBT) recording. The nurse can alleviate some of the anxiety associated with diagnostic testing by offering explanation about timing and reasons for each test. In addition, the nurse should be familiar with the fertility problem, the couple's stage of coping, and fertility centers for referral (Ricci, 2009; Marry and McKinney, 2014).

SIGNIFICANCE OF THE STUDY

Infertility is considered a bio psychosocial crisis that, affects every part of an individual’s or couple’s life. It may challenge the ways in which couple feel about themselves and their relationships with their partner, family, and friends. It often impacts their work environment and general outlook on life. (Broeck, Emery, Wischmann &Thorn, 2010; Unger eider, Rothschild, & Nichols, 2012). The literature repeatedly emphasizes the importance of identification the profile of infertile women. However, in Egypt there is scattered nursing researches that document the profile of infertile women; so, the current study will explore the profile of Egyptian infertile women. This study also will contribute to improve the nursing practice especially in relation to follow–up and monitor women for early detection of problems that may predispose to infertility.

AIM OF THE STUDY

The aim of the current study was to assess the profile of the infertile women in Egypt.

RESEARCH QUESTION

To Achieve the Aim of this Study the Following Research Question was Formulated:

What is the profile of the infertile women in Egypt?

SUBJECTS AND METHODS

Research Design

A descriptive exploratory design was utilized to achieve the aim of the current study.

Setting

The settings of data collection were: 1) the Outpatient Gynecological Clinic (at the Infertility Clinic) at El Manial University Hospital and 2) Private clinic.

Sample

A total of 300 married women were recruited for the study according to the following inclusion criteria: Women having primary or secondary infertility, and at the reproductive age (during the childbearing period). Women who their husbands were responsible for infertility were excluded.

The sample size was determined according to the following sample size equation:

$$N = \frac{4(Zcrit)^2 \quad p\,(1 - p)}{D^2}$$

Where,

N = total sample size

Zcrit = values of significance criterion

P = pre-study estimate of the proportion to be measured

D = minimum expected difference

Tools

In order to achieve the purpose of the study the following tools were developed:

- An interviewing questionnaire schedule and
- Anthropometric assessment tool.

They were designed by the investigator based on extensive review of literature.

The Interviewing Questionnaire Schedule

Used to collect data related to **sociodemographic characteristics** such as; age, residence, educational level, occupation….etc; **menstrual history** such as age at menarche, regularity, interval, duration of menstrual flow, amount of menstrual flow, menstrual abnormalities present…..etc; **obstetrical profile** such as gravidity, parity, number of abortions, history of complications during last pregnancy, labor, and postpartum period, mode and place of previous delivery…etc; **medical history** as disease as anemia, diabetes, heart disease…etc; **gynecological history** as disease as vaginitis, ovarian cysts, uterine polyps….etc; **patient's health habits** as diet source, number of meals, main meal, content of meals…etc;

sexual history as had any sexual problems; and **history of fertility therapy** as medications taken for infertility treatment, use of assisted reproductive techniques….etc.

The Anthropometric Assessment Tool

Used to assess **body mass index**, after obtaining the baseline data, the investigator

Measured woman's height. Also, weight was measured, then body mass index was calculated by dividing the subject's weight in kilograms by the square of her height in meters (BMI = kg/m²). World Health organization (WHO) (2000); Jeannette, Robert and Cynthia (2004) categorized the body mass index as the following values: A BMI less than 18.5 is under weight; A BMI of 18.5 – 24.9 is normal weight; A BMI of 25.0 – 29.9 is overweight; A BMI of 30.0 – 39.9 is obese; A BMI of 40.0 is higher or severely (or morbidly) obese.

Tool Validity

The tools were developed in English then translated to Arabic by the investigator. Both English and Arabic versions submitted to a panel of 5 experts in the field of gynecology and maternity nursing to test its content validity. Modification was carried out according to the panel judgment on clarity of sentences and the appropriateness of content. Test reliability of the proposed tools were tested by (cronbach's alpha=0.88), showed a strong significant positive correlation between the items of tools.

Pilot Study

A total of 30 infertile women were recruited for the pilot study to investigate data collection tool for its feasibility, objectivity, content validity, clarity of the questions and correction of any discrepancies found in this tool. The pilot study lasted one and half month and revealed that the average length of time to complete the interviewing questionnaire and calculate body mass index was approximately 30 minutes.

ETHICAL CONSIDERATION

Primary approval was obtained from the research ethics committee Faculty of Nursing Cairo University, and an official permission was taken from authoritative personnel in Outpatient Gynecological Clinic at El Manial University Hospital as well as from a private clinic administrator to conduct the study. Participants and health care providers were informed about the purpose and benefits of the study. The investigator emphasized that participation in the study was entirely voluntary and that participants have the right to withdraw at any time without giving any reason and without any effect on their care or health. Written consent was obtained from them.

PROCEDURE

Data were collected through a period of 10 months from the first of May 2014 to the end of February 2015. Data were collected through interviewing and anthropometric assessment.

Interviewing

All women were interviewed to collect data related to sociodemographic characteristics, health habits, medical, menstrual history, gynecological, obstetric history, sexual history and history of infertility treatment. The investigator met the women at the Infertility Clinic at El Manial University Hospital; and in a Private clinic where they came for the first

time, or for follow- up of their condition.

The investigator introduced herself to the women, and informed them that the study posed no risks or hazards on their health, and then asked for written consent from the women who were willing to participate and met the inclusion criteria. The investigator faced the woman, asked her the questions in simple Arabic language and recorded her answers in the questionnaire sheet. The interview lasted for 20 minutes for each woman.

Anthropometric Assessment

After obtaining the baseline data, the investigator measured woman's height through tape measurement. Also, weight was measured utilizing bath scale, accuracy was obtained through balancing zero prior to obtaining each weight, then body mass index was calculated by dividing the subject's weight in kilograms by the square of her height in meters (BMI = kg/m^2). it took about 10 minutes for each woman.

Physical and gynecological examination was performed to each woman by the physician and the investigator assisted in the examination process, and then the physician prescribed laboratory investigations as hormonal profile. Also, diagnostic procedures such as ultrasound, hysteron salpin go grapy, and laparoscopy if not done before to detect the cause of infertility. Follow-up was obtained by the woman either by phone or directly by coming to the infertility clinic.

STATISTICAL ANALYSIS

Data management was done by coding and entering responses into the computer. The investigator checked all data to avoid any discrepancies; data were examined for coding and entry error. Subjects' records were stored through the Statistical Package for Social Sciences (SPSS version 18), which was used for statistical analysis of data as it contains the test of significance given in standard statistical books.

Descriptive Statistics

They were used to analyze the sample population. Data were summarized using:

- The arithmetic mean as an average, describing central tendency of observations of each variable studied.
- The standard deviation as a measure of dispersion of results around the mean.
- The frequency distribution and percentage of observation for each variable studied.

Inferential Statistics

- Multiple regression analysis was also used to examine the differences and similarities with in the sample and to identify predictor variables of the infertility patients.

Level of Significance

For all statistical tests done, the threshold of significance was fixed at the 0.05. Probability (p-value) > 0.05 was considered non significant, (p-value) ≤0.05 was considered significant, and (p-value) <0.01 was considered highly significant.

RESULTS

- **Socio-Demographic Characteristics**

Table 1: Distribution of the Sample According to their Age, Residence, and Occupation (n=300)

Characteristics	Frequency	%
Age (in years)		
≤20	30	10
21-30	149	49.7
31-40	109	36.3
>40	12	4
Mean± SD	28.62 ±6.32 years	
Residence		
Urban	225	75
Rural	75	25
Occupation		
Housewife	273	91
Working	27	9

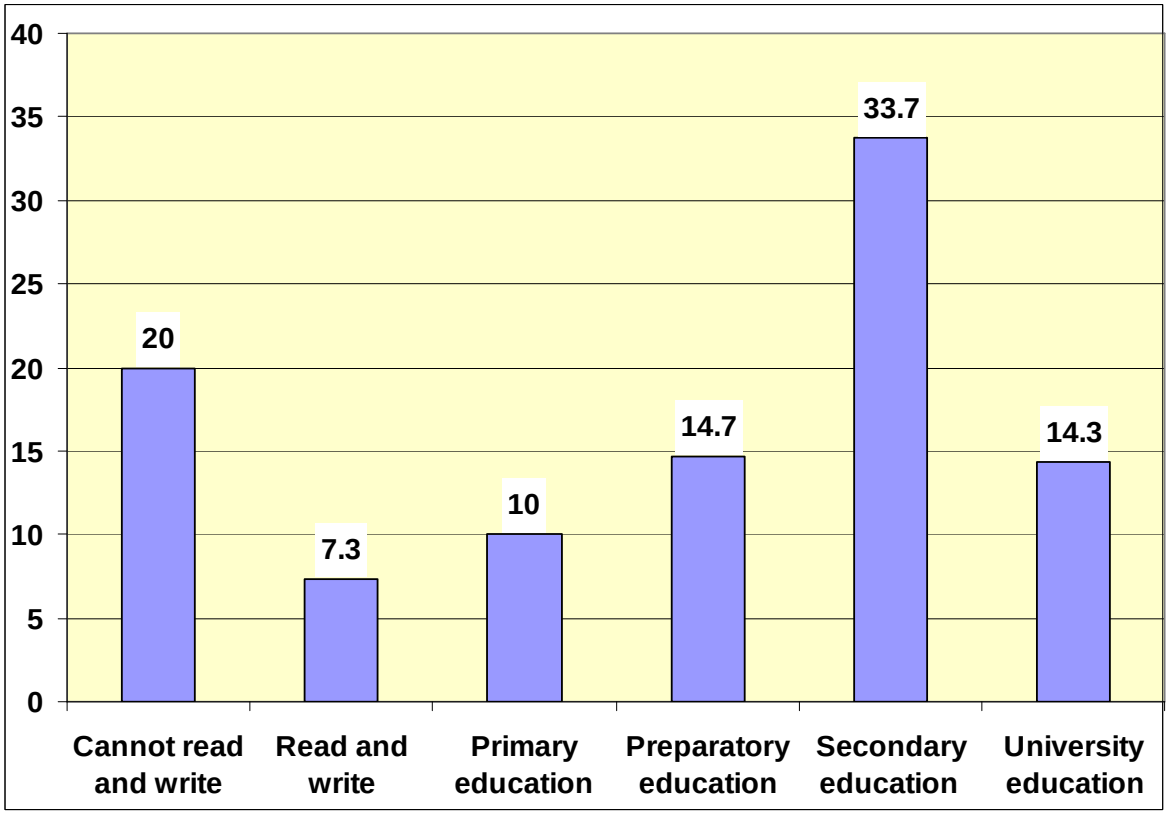

Figure 1: Distribution of the Sample According to Their Educational Levels

- **Type of Infertility**

Regarding the type of infertility, 57% of the sample had primary infertility, while 43% had secondary infertility. Mean duration of infertility was 4.32 ± 3.55years.

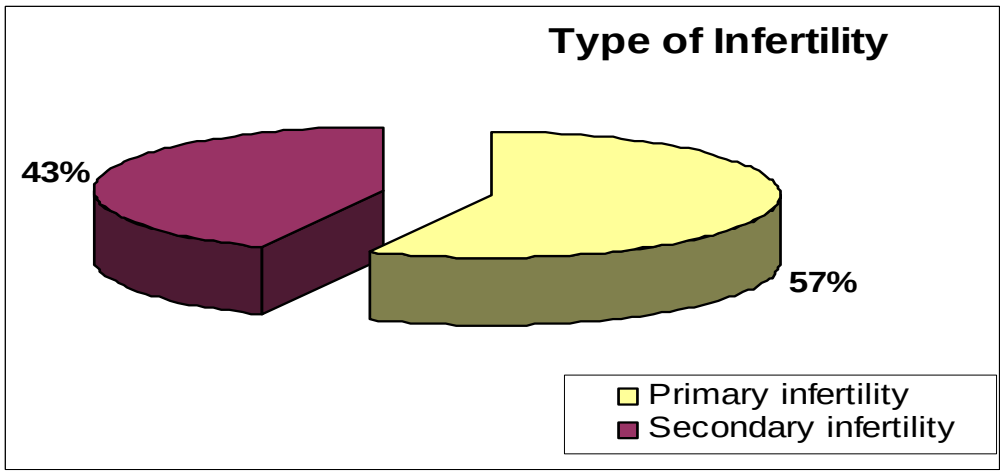

Figure 2: Distribution of the Sample According to Their Type of Infertility

Assessment of Body Mass Index

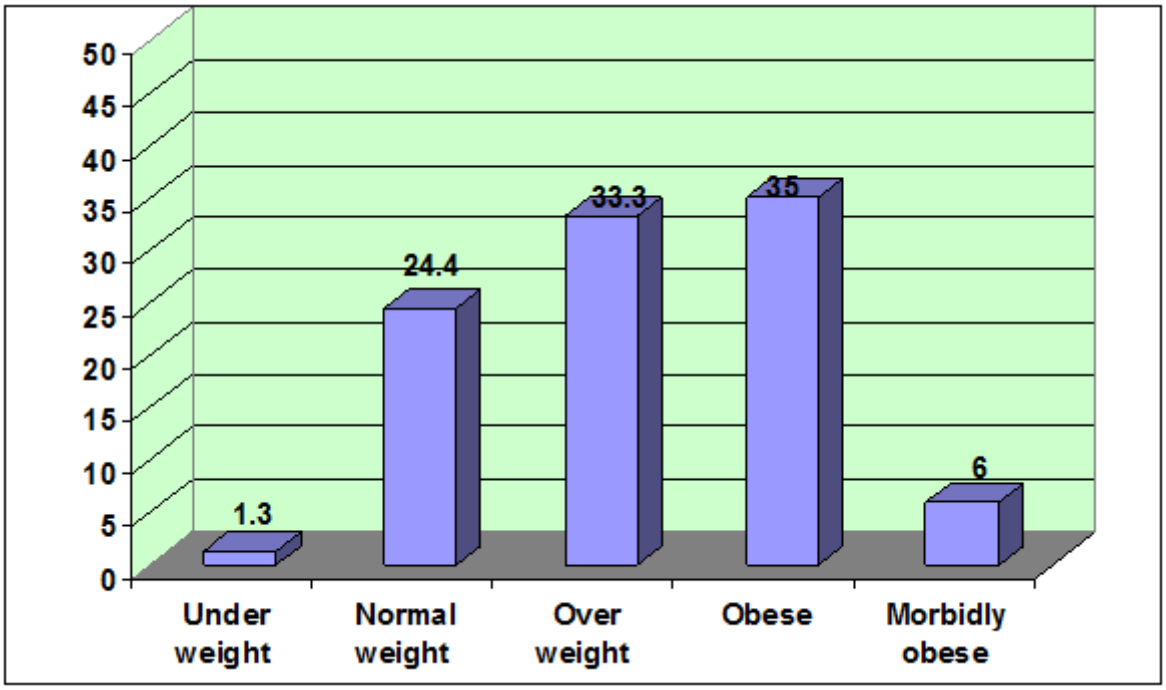

Figure 3: Distribution of the Sample According to Body Mass Index Categories

- **Obstetrical Profile**

Mean age at marriage was 25.99 ± 7.53 years, while duration of marriage range was 1-25 years with a mean of 6.22 ± 4.41 years. As regards the menstrual history, mean age at menarche was 12.88 ± 1.51 years, 61% of the sample had irregular menstruation, mean of menstrual duration was 4.55 ± 1.66 days, and 74% of the sample had moderate menstrual flow, while 2.3% of them had scanty menstrual flow, table (2). 40.7% of the sample had menstrual abnormalities, and 50% of them had oligomenorrhea. As regards taking medications, 28% of the sample were taking medications to regulate their menstruation, while, 85% use it with the purpose of inducing ovulation. Figure (3)

Table 2: Distribution of the Sample According to Menstrual History (n=300)

Menstrual History	Freq.	%
Rhythm		
Irregular	183	61
Regular	117	39
Menstrual Duration (Mean± SD)	4.55±1.66	
Amount		
Scanty	7	2.3
Mild	36	12
Moderate	222	74
Heavy	35	11.7

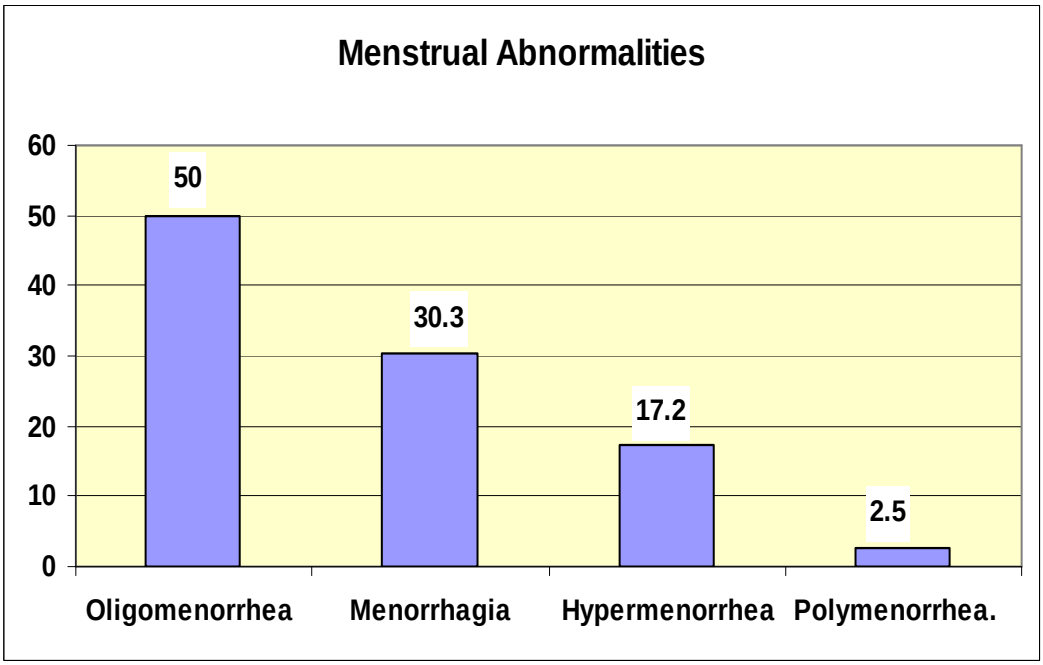

Figure 4: Distribution of the Sample According to Their Menstrual Abnormalities

Regarding parity 59.7% of the secondary infertile women had previous delivery (36.4 % primipara, and 23.3 % multipara), history of complications during pregnancy such as: vaginal bleeding, PROM, and PIH (10.4%, 1.3%, & 1.3% respectively); while history of complications during delivery such as: fetal distress, vaginal bleeding, and prolonged labor (1.3%, 1.3%, & 1.3%, respectively); and history of complications during postpartum period such as: vaginal bleeding, wound infection, and postpartum fever (3.9%, 2.6%, & 1.3% respectively). 57.1% of the secondary infertile women had previous delivery delivered by CS, while 28.6% of them delivered by normal vaginal delivery (NVD), and 14.3% of them delivered by vaginal delivery with episiotomy. Also 61% delivered in governmental hospitals. Figure (4)

Concerning use of contraceptive methods, 42.6% of the sample used different methods of contraceptives, 58.2% of them used IUD, while 21.8% of them used contraceptive pills, and 20% of them used contraceptive injections, with a mean duration of use of 19.60 ± 12.74 months, and 83.6% of them discontinuated the method because they wanted to be pregnant.

- **Medical and Gynecological History**

As regards the history of medical diseases, the study results revealed that, 15.3% of the sample had history of medical diseases as: anemia, renal disease, hypertension, rheumatoid arthritis, diabetes mellitus, hyperthyroidism, and toxoplasmosis (45.6%, 21.7%, 8.6 %, 8.6 %, 6.5 %, 6.5%, & 6.5% respectively). However, 79.7% of the sample had history of gynecological diseases as: PCO, cervicitis, vaginitis, and PID (36.3%, 32.2%, 29%, & 2.5% respectively). Figure (5)

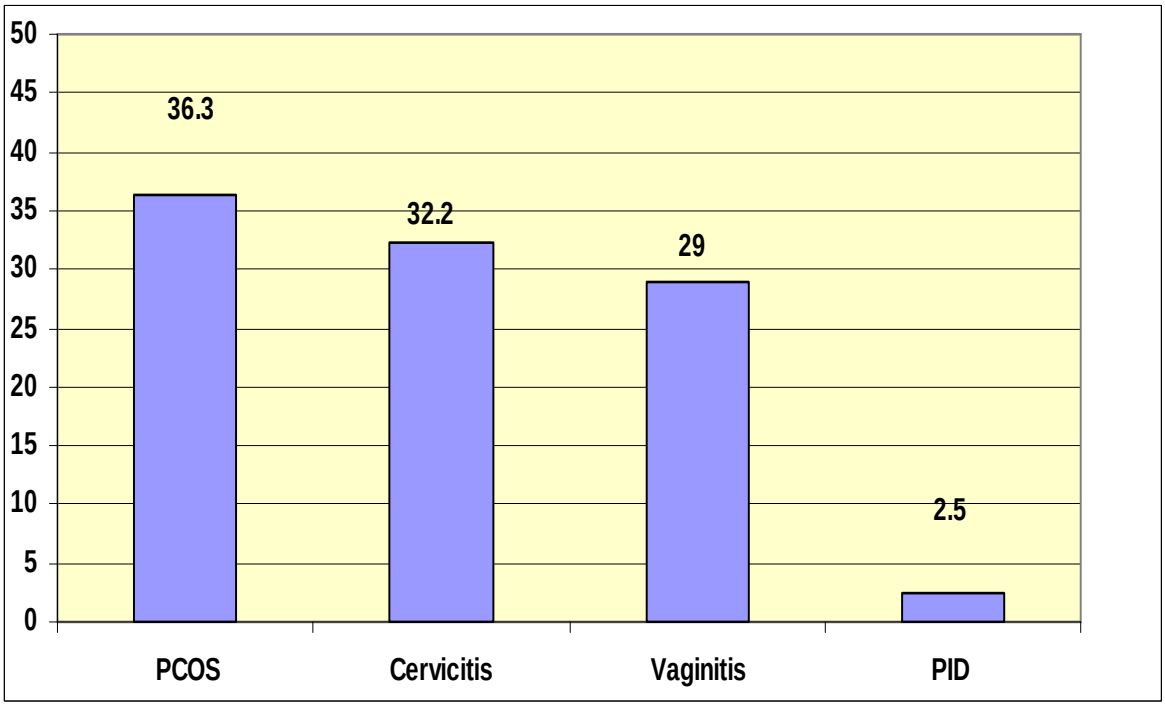

Figure 5: Distribution of the Sample According to Their Gynecological History

Patient Health Habits

Regarding patients' nutritional habits, 50.7% depend on three meals, 57% of the sample had snacks between meals, and 42.3% of the sample were depending on fatty saturated diet. As for cigarette smoking, 2% of the sample were cigarette smokers with range 5-20 cigarettes/day and with a mean of 10.3± 6.02 cigarettes.

Sexual History

The mean of sexual intercourse/week was 3.04± 1.46 times. Sixteen point seven percent of the sample had sexual problems as dyspareunia, vaginismus, and effluvium seminis (66%, 40%, & 30% respectively); 1.3% of the sample were using chemical lubricants for intercourse, and 8.7% were using antiseptic douches immediately after intercourse.

History of Infertility Therapy

Concerning history of medications and investigations for infertility, 91.7% were taking medications to treat infertility, 99% performed investigations and tests to diagnose infertility, and 11.7% of them referred to assisted reproductive techniques (IUI, ICSI, & IVF) to treat infertility, and more than half of the sample (55.3%) tried to get pregnant from 1- < 5 years.

Factors Affecting Infertility

Considering factors that might affect the incidence of female infertility (figure, 5).

Demographic variables' finding of the current study indicated a relation between incidence of infertility and age of the women while, no statistically significant relations were found between incidence of infertility and residence, educational level, occupation, and patients' blood relation with their husband.

Regarding BMI, The results of the current study indicated that BMI was a predictor variable that might affect the incidence of infertility.

Investigating life style factors, the results of the current study indicated a relation between incidence of infertility and fatty saturated diet, having snacks between meals, while, no statistically significant relations were found between incidence of infertility and diet source, number of meals, and cigarette smoking.

Regarding reproductive factors, the results of the current study indicated relations between incidence of infertility and age at marriage, duration of marriage, irregularity of menstruation, menstrual abnormalities, parity, use of contraceptive methods, history of complications during pregnancy, labor, and postpartum periods, and mode of previous delivery.

As for gynecological factors, the results of the current study indicated that there was statistically insignificant relation (P=0.609). While, on the item analysis results revealed that, there was a statistically significant relation between incidence of infertility and history of polycystic ovary, and cervicitis, while, no statistically significant relations were found between incidence of infertility and history of vaginitis, and PID.

Finally, regarding sexual factors, the results of the present study indicated a relation between incidence of infertility and frequency of sexual intercourse/week, while, no statistically significant relationus were found between incidence of infertility and, presence of sexual problems, use of chemical lubricants for intercourse.

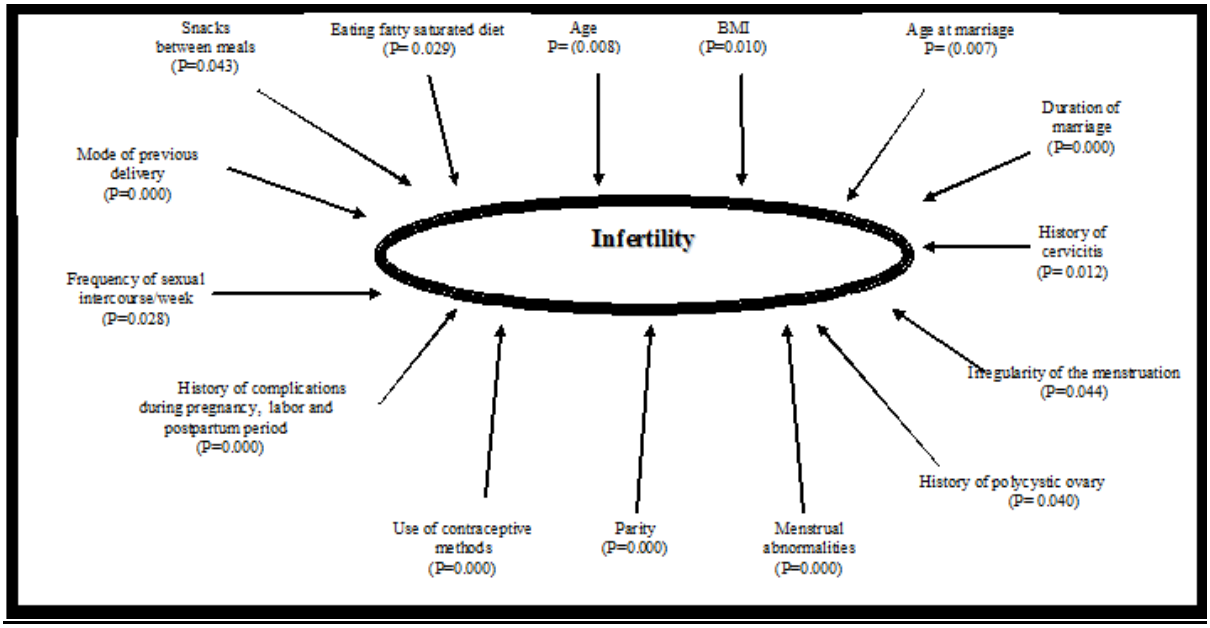

Figure 6: Factors Affecting Infertility

DISCUSSIONS

Findings of this study indicated that more than one-third of the women were in the age range 31-44 years old. This finding is matched with the data in the study of Gurevich (2010), who reported that as a woman ages beyond 35 years (and particularly after age 40 years), the likelihood of becoming pregnant is less than 10% per month. Moreover, this finding is consistent with results reported by many studies as (George and Kamath, 2010); and (Lui and Case, 2011).

On the other hand, an educational level is not a predictor variable that might affect the incidence of infertility. Findings of this study indicated that, more than three quarters of the sample is educated. However, this finding was contradicting with Chicoine, 2012, who reported that reduction in the marital education contribute to reduce fertility. In addition, study done by Serhat, and Cengize (2016) found that there is a positive relationship between the primary school enrollment of female and fertility rate, on the other hand negative relationship found between both the secondary school enrollment and fertility rate and tertiary school enrollment and fertility rate. This contradiction between the previously mentioned studies and the current study might be related to that, almost 80% of the sample received education at different levels, and only one fifth of the sample can't read and write.

In addition, findings of this research indicated that more than two-thirds of women were overweight and obese, less than half of them were depending on fatty saturated diet in their meals, and more than half of them had snacks between meals and these factors have a significant relation with declining female fertility. These findings are supported by study done in Egypt by Ebrahim, 2011, who mentioned that women with BMI$\geq$ 30Kg/m^2 was a predictor variable that might affect the incidence of infertility Moreover, this finding is consistent with results reported by many studies as (Khaskheli, Baloch, A, and Baloch, SH, 2013); and (Comstock et al. 2016)

Findings of this research indicated that the mean age of women under study at marriage was 25.99±7.53 years, and more than one-third of the sample got married at age >30 years, and less than one-third of the sample got married at an earlier age ($\leq$20 years). This finding is matched with the data in different studies as (Yang, Shen, Chen J and Chen Z, 2011); and (Vahidi, Adalan and Mohammed, 2009)

Moreover, findings of this research indicated that slightly more than three fifth of the women had menstrual irregularities and approximately two fifth of them had menstrual abnormalities as oligomenorrhea, menorrhagia, hypermenorrhea, and polymenorrhea. So, there is an association between menstrual irregularity, menstrual abnormalities, and the declining of female fertility which in turn reduce chances of achieving pregnancy. These findings are supported by (Small et al. 2011).

As regard complications of previous pregnancy, labor and postpartum period, they are predictor variables that might have affected the incidence of infertility. Similarly, Orji (2008), in his study denoted that, the previous mismanaged pregnancies had negative impact on future fertility.

Considering mode of previous delivery as a predictor variable that might affect the incidence of infertility, findings of this study revealed that, more than half of the secondary infertile women had previous delivery delivered by CS, which may cause complications as tubal and pelvic adhesion that may have an impact on female fertility resulting in secondary infertility. This finding is in agreement with Gurol-Urganci et. al. (2013); & (Gao et. al. 2016) which found that, mode of delivery had a strong association with reducing female fertility.

The use of contraceptive methods especially IUD was a fundamental indicator of the incidence of female infertility. Results of this study revealed that less than three fifths among those who used contraceptive methods utilized IUD. This finding is congruent with that of Corcoran (2008), who reported that the most profound complications of IUDs are infection, pelvic inflammatory diseases, and infertility. In addition Stoddard, Xu, Madden, Allsworth, and Peipert, (2015) reported in their study that there is a clinically and statistically significant reduction in fertility in African American women with using of IUD. In contrast, Abdinasab, Dehghani Firouzabadi, Farajkhoda, and Abdoli (2017) demonstrated that no relationship between the use of IUD and frequency of secondary infertility.

Concerning age at menarche in the present study, it was not a predictor variable that might have affected the incidence of infertility. This finding is in agreement with Tarrad (2008), who showed that, the menarche was not associated with fertility. In contrast with the data of Komura, Miyake, Chen, Tanizawa, and Yoshikawa (2011), who revealed that, 15.7% of women who started menstruation after the age of 18 years had significantly higher rate of infertility than those who had menstruation started at a mean age of 13.7 $\pm$ 0.1 years.

Gynecological factors are not predictor variables that might affect the incidence of infertility. However, by item analysis, the findings of this study indicated that, polycystic ovary and cervicitis are predictor variables that might affect the incidence of infertility. Findings of this research indicated that more than third of those women who had gynecological problems complained from PCOS, and slightly less than third of them complained from cervicitis. This finding is in agreement with that of a study carried out by (Chen & Shi, 2010), and (Joham, Teede, Ranasinha, Zoungas, & Boyle, 2015).

Frequency of sexual intercourse/week is a predictor variable that might affect the incidence of infertility. The findings of the study revealed that, more than one-third of the women had sexual intercourse less than three times/week, which might lead to aging sperm, while more than one-tenth of the women had sexual intercourse more than four times/week which might lead to premature sperm, and more than one-half of the women had sexual intercourse at range 3-4 times/week which is within normal range but might be with mistiming. This finding is in agreement with (Marchburn, Alanis, & Matthews, 2009), and (Luk, & Loke, 2015).

Surprisingly, use of chemical lubricants for intercourse and use of antiseptic douches immediately after intercourse in the current study were not predictor variables that might affect the incidence of infertility. This might be due to that a minority of the sample (1.3%) were using chemical lubricants for intercourse and less than one-tenth were using antiseptic douches immediately after intercourse, this finding is contradicting with results reported by the following studies (Cottrell, 2010); and (Sandhu, Wong, Kling, and Chohan, 2014).

CONCLUSIONS

Based on the findings of the present study it is concluded that: the profile of the infertile woman in Egypt is; that age ranged from 16-44 years, with different levels of education. Duration of infertility range 1-23 years. Eating fatty saturated diet, had snacks between meals, and increased body mass index.

The study profile included also, age at marriage range 15-40 years, age at menarche range 8-20 years, having irregular menstruation, and having menstrual abnormalities, using medications to regulate menstruation and to induce ovulation. having history of complications during pregnancy, labor, and postpartum periods, having history of utilizing

contraceptive methods, and having history of PCO, and cervicitis. The study also revealed that, having history of sexual problems, and taking medications to treat infertility.

RECOMMENDATIONS

Based on the results of the current study, the following may be recommended:

- Emphasizing the importance of preconception examination screening program in early detection of infertility factors.
- Teaching women during childbearing period about predisposing factors of infertility and importance of regular screening in early detection of these factors.
- Raising women's awareness regarding to adopting a healthy life style as following dietary program and practicing exercise.
- Increasing dissemination of information about risk factors of infertility and benefits of preconception examination screening program through mass media.

Further studies are necessary to examine the following:

- The relation between body weight and infertility.
- Repetition of the study using qualitative design to examine the lived experience of the infertile women.

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